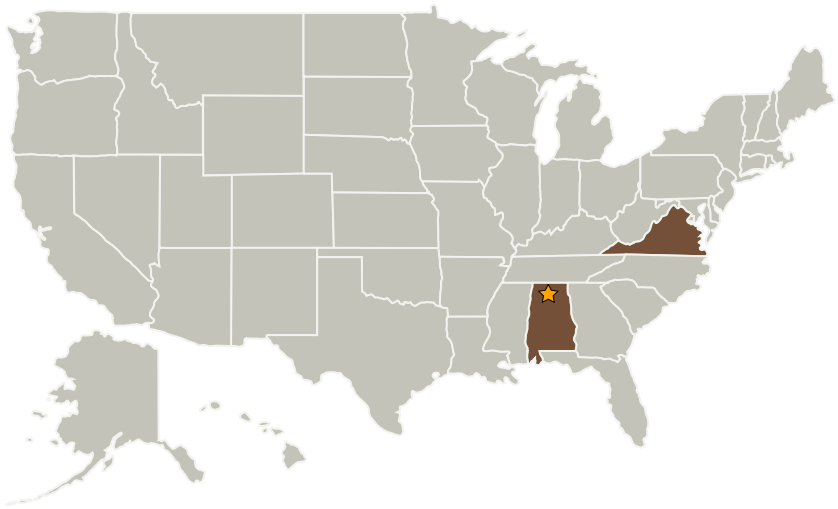
Interface coatings for Carbon and Silicon Carbide Fibers in Silicon Carbide Matrixes, Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

Interface coatings for fiber-reinforced composites are an enabling technology for high temperature ceramic matrix composites. Because of their availability and relative cost, graphite fibers are preferred for many structural composite of interest for space propulsion applications. However, high temperature stable silicon carbide fibers are also of interest, even though they are higher cost. Recent work at Synterials, has suggested that a thin layer of carbon at the surface of the fiber is key to preventing corrosion of the fiber and subsequent fiber strength reduction on graphite fibers. The proposed work will evaluate three interface coatings one three graphite fibers and one silicon carbide fiber. The coating are: B4C, Si-doped BN/Si3N4 and HfC. The coatings will be evaluated by preparing mini-composites via a polymer plus CVI processing route.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Synterials Inc	Supporting Organization	Industry	Herndon, Virginia

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Alabama	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Daniel R Petrak

Technology Areas

Primary:

- TX14 Thermal Management Systems
  - TX14.2 Thermal Control Components and Systems
    - TX14.2.4 Insulation and Interfaces